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Estimating Quasi-Fiscal Deficits in a Consistency Framework

The Case of Madagascar

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and
Hector Sierra

To assess fully the effect of adjustment programs and development strategies, it is essential that the fiscal deficit include quasi-fiscal deficits — the losses of public financial institutions such as the central bank. A flow-of-funds format may be the best approach for doing so. as this case shows.

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This paper — a product of the Private Sector Development Economics Division, Africa Technical Department — is part of a larger effort in the department to assess the macroeconomic impact of quasi-fiscal deficits. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Nydia Velasco, room J3-283, extension 34346 (February 1993, 26 pages).

In practice, conventional measures of the fiscal deficit exclude the activities of public financial institutions. As a result, fiscal policies may be applied inappropriately when these institutions — especially the central bank — run large losses (the quasi-fiscal deficit).

The macroeconomic effects of the quasi-fiscal deficit are similar to the effects of the deficit from other public entities — and should therefore be included in the public deficit.

Conceptual and practical difficulties have so far precluded a definition of quasi-fiscal deficits that is operationally useful and comparable across countries. After studying the methodological and practical problems of treating quasi-fiscal deficits, Le Houerou and Sierra propose using a flow-of-funds format, which in principle could be standardized across countries.

Using Madagascar as an example, they show that the public sector deficit is significantly undervalued if quasi-fiscal deficits are not considered.

They contend that such deficits must be taken into account in assessing the success of adjustment problems and development strategies supported by the IMF and the World Bank.

ESTIMATING QUASI-FISCAL DEFICITS IN A CONSISTENCY FRAMEWORK: THE CASE OF MADAGASCAR

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I. Introduction.

In many developing countries the Central Bank performs "quasi-fiscal" activities not specifically connected with monetary policy. The losses incurred by these activities--known as the "quasi-fiscal" deficit--may be huge, as shown by the experience of many Latin American countries during the debt crisis of the 1980s. In the last five years or so, a considerable amount of effort has been devoted to define adequate ways to measure the quasi-fiscal deficit. It is now widely agreed that it has macroeconomic effects similar to the deficit of other public entities, and therefore should be included in the overall fiscal deficit (see Anand and Van Wijnbergen [1988], Robinson and Stella [1988], Blejer and Cheasty [1991], Rezende-Rocha and Saldanha [1992].) The correct measure of the quasi-fiscal deficit is then a prerequisite for diagnosing economic problems and finding appropriate fiscal policies to address them.

In most practical applications, however, conventional deficit measures include only the central government. Even in comprehensive measures the public financial institutions are often excluded because of their special role as financing agents. One problem is the practical difficulty of measuring the amount of the losses incurred by these institutions. Quasi-fiscal deficits are often omitted or blend with other operating losses, unless they are too large to ignore (Teijeiro [1989].) Another problem is the country-specific nature of the quasi-fiscal deficits, which so far has precluded a general definition applicable across countries and institutions.

Our main objective is to present a stylized accounting methodology to help examine the underlying principles behind quasi-fiscal deficits, and to compute them in an operationally meaningful way. Our approach is based on the flow-of-funds format, which essentially consists of a series of identities that reflect the fact that what is a use for one sector, is also a source for another sector. This consistency framework reconciles historical data on income, expenditure, saving, investment and financial flows of different sectors in the economy (Holsen [1989].) In this paper we will concentrate on the quasi-fiscal deficit of the Central Bank. The methodology, however, may be applied to public financial institutions in general.

The flow-of-funds approach has two main advantages. First, it emphasizes the macroeconomic nature of quasi-fiscal deficits. To be able to assess correctly the impact of quasi-fiscal deficits, the analyst must specify precisely the linkages between the main economic agents, and treat the deficits as an integrated whole. The framework will make more transparent the link between the quasi-fiscal deficit and inflation and the crowding-out of the private sector. Second, the methodology implies full consistency of treatment of the deficits of the non-financial public sector and the financial institutions being examined. This is an important requirement for the proper consolidation, and symmetry of treatment, of transactions between the government and public financial institutions. Additionally, the flow-of-funds methodology allows the possibility of obtaining estimates of some flows residually, such as Central Bank losses, adjusted such that the other sectors are consistent within the macroeconomic framework. The latter is specially important for countries, like most in Africa, for which data is scarce.

Throughout the paper, we test our methodology with data collected for Madagascar. We examine the historical period from 1986 to 1991. During this period, the Central Bank incurred considerable losses. We show that the public sector deficit is significantly undervalued if quasi-fiscal deficits are not considered. For the Malagasy economy, any relationship between fiscal deficit, credit to the private sector and inflation must take into account the results of the Central Bank. The case of Madagascar, however, is not different from most African countries, where the tremendous pressure on the governments to cut

fiscal deficits while maintaining non-viable public enterprises, for political and social reasons, often results in the accumulation of the less-visible quasi-fiscal deficits. Conventional deficit measures most likely will underestimate the fiscal deficit, and therefore result in an erroneous assessment of its sustainability.

The paper is organized into six sections, including the present introduction. In the next section we revise conceptual aspects of QFDs. Here, we examine in some detail the main theoretical and practical issues that make the computation of quasi-fiscal deficits difficult. In section Three we examine briefly the economic environment of Madagascar. In section Four, we develop an analytical framework, based on the flow-of-funds approach, within which we may examine the impact of quasi-fiscal activities. In section Five, we use the framework to estimate the size of the quasi-fiscal deficits for the period 1986 to 1991. We then "correct" the fiscal deficit by taking into account the quasi-fiscal deficit. In section Six, we establish our conclusions.

II. What are Quasi-Fiscal Deficits?: Main Conceptual Issues

In a broad sense, quasi-fiscal deficits (QFDs) are expenses or losses incurred by public financial institutions. They reflect a subordination of these institutions--in particular of the Central Bank--to the ministry of finance. Quasi-fiscal activities are diverse: they include the management of explicit or implicit subsidies, transfers to public non-financial or financial institutions outside the central government, the provision of preferential credit, the bailout of ailing industries, etc. QFDs grow at times of domestic financial and external payment crises due to support to distressed financial institutions and domestic debtors burdened by external liabilities denominated in external currencies. Indeed, they can reach massive proportions during years of financial and external crises in countries with weak financial institutions. QFDs of the Central Bank amounted to a cumulative 55 % of GDP during 1982-85 in Argentina, and to 41 % of GDP during the same period in Chile (Easterly and Schmidt-Hebbel [1991].)

It has frequently been argued that quasi-fiscal operations are similar to other budgetary activities and should be included in a comprehensive measure of the public sector balance (Blejer and Cheasty [1991].) Regularly, institutions such as the Central Bank undertake activities such as the provision of subsidized credit to particular sectors. In many countries these activities may be undertaken directly by the agencies in the central government. We agree with Robinson and Stella [1988] that "it may be difficult to see why an activity administered by the Central Bank may be different in an economic sense from one administered by other government agencies, and therefore, why, if the latter are in a measure of the central government deficit, the latter should be excluded." Certainly, the experience of the Latin American countries illustrate how misleading public sector deficits can be if not corrected for QFDs.

A key "working assumption" in the computation of QFDs is that the Central Bank as well as other public financial institutions should be financially sound, and that--in the absence of quasi-fiscal activities--should not incur losses on their core operations. For example, the Central Bank will have access to zero cost financing (monetary base), and financing below market rates (unremunerated deposits of commercial banks), while being able to invest these funds at market rates. Moreover, profits may originate from financial investments directly financed by the liquid net worth of the Central Bank. Thus, under "normal" conditions, the Central Bank should report profits or at least zero losses.

This assumption has motivated researchers to "amalgamate" Central Bank losses with the fiscal deficit, as the more practical way to capture the QFD. For example, Robinson and Stella [1988] propose

that (i) Central Bank operational losses be incorporated into the public sector deficit by the addition of a transfer from government to the Central Bank, financed by credit from the Central Bank, and (ii) an estimate of the size of Central Bank quasi-fiscal activities falling outside the profit-and-loss account should be made, and then amalgamated into the adjusted fiscal deficit. As it is stated in Blejer and Cheasty [1991,p.1663], this definition "would mix net worth with cash concepts, but would have value as a supplementary indicator showing the approximate impact of Central Bank quasi-fiscal activities on the overall public sector balance." According to Robinson and Stella, Central Bank losses should be included in the fiscal deficit, whether or not they arise from QF activities. Their argument is based on an existing asymmetry. Frequently, the Central Bank transfers all of its profits to the government as excess fiscal earnings. In this case, the fiscal deficit will already reflect the impact of QF activities. However, current losses do not elicit a transfer from the government to cover the losses, so the measured deficit does not rise.

While the consolidation of the Central Bank and fiscal deficits may be the more practical approach, it is essential to identify all the revenues and expenditures arising from QF activities. Isolating these activities in the accounts of public financial institutions would make their costs more transparent, thus aiding scrutiny by the authorities. This transparency is essential for the design of sound policy prescriptions Even if the public financial institution is making a profit, leaving such activities in the accounts will understate the gross level or revenues and expenditures, frequently taken as a proxy for government intermediation in the economy.

One practical problem, however, is the precise identification of "normal", as opposed to "quasi-fiscal" activities. For example, the "normal" monetary activities of the Central Bank include currency issue, banking regulation and supervision, the aggregate control of credit, the clearance of balances between banks, and custody of the government reserves. If the Central Bank is used to bailout commercial banks and/or enterprises (public and/or private) experiencing financial difficulties, this is clearly a quasi-fiscal activity. Ideally, then, government accounts should incorporate all quasi-fiscal revenues and expenditures, leaving Central Bank accounts covering only "normal" monetary activities.

Nevertheless, clear distinctions may be difficult. For example, direct government credit and bond rediscounting, generally considered monetary activities, will take on a quasi-fiscal dimension if performed at subsidized rates. Central Banks usually provide exchange rate guarantees as a way to facilitate foreign borrowing by domestic residents. If a premium is charged, the Central Bank may make a profit in return for reducing the insured's risk. If, however, the Central Bank is forced to assume the external transfer portion of private sector debt, even when it was not guaranteed by the government, the resulting losses are of a QF nature. Different accounting conventions between the government and the Central Bank may also complicate the identification of the "real" QFD. Usually, the conventional government deficit is based on a cash-accounting system. Central Bank accounting systems, on the other hand, typically follow the normal business practice of being on an accrual basis. Inflation may be another major source of distortion in the computation of the QFD (see Teijeiro [1989], and Rocha and Saldanha [1992].)

So far, most country studies of QFDs have relied on the "orthodox" criteria to compute the QFD. For example, in Onandi and Viana [1987], and Velazquez [1991], an operation of the Central Bank is of a QF nature if it is not related with the classical or "orthodox" functions of the Central Bank. Onandi and Viana [1988] examine the impact of quasi-fiscal activities in Uruguay. According to these authors, "Traditionally, a series of Central Bank operations are performed outside of the government budget, but their fiscal impact can not be ignored. Thus, we understand an operation of the Central Bank to be of a quasi-fiscal nature if it is not related to the classical (orthodox) functions of the Central Bank" (authors'

translation.) According to Velazquez [1991], ".. the earnings or losses incurred as a consequence of non-monetary activities of the Central Bank, should be correctly incorporated in the measure of the fiscal deficit" (authors' translation.) Clearly, this approach discriminates against "purely monetary" activities performed at subsidized rates. Furthermore, precisely what Central Bank activities may be considered as "orthodox" is still a controversial issue (nevertheless, see de Kock [1974] for a list of activities generally considered to be properly within jurisdiction of the Central Bank.)

Another approach is followed in Piekarz [1987], where a more general framework is provided to examine the issue of QFDs from the Argentine perspective. He argues that QFDs should be defined as the difference between the earnings and expenditures not considered in the fiscal deficit. This is basically the difference between income from net foreign and domestic assets, and net expenditures on interest payments, and/or other adjustments resulting from the instruments used in the control of monetary expansion. Piekarz excludes instruments like unremunerated reserve requirements and open market operations with government securities. In the case of the latter, he argues that they properly belong to the Treasury, not the Central Bank, computing their interest payments as public expenditure in the conventional fiscal deficit definition of the non-financial public sector. In the case of the former, they are rigorously part of the inflationary tax and/or seigniorage. More recently, Giorgio [1991] applied the Piekarz approach to examine QFDs in Argentina for the period 1977-89.

It is our view that any effort to provide a generic definition of the QFD will inevitably be partial and incomplete. Quasi-fiscal activities vary from country to country, and have an effect in both the profit-and-loss and balance sheet accounts, making almost impossible to assess their impact through one single deficit measure. The situation is further complicated in practice by the differing accounting systems used in the government and other public financial institutions. Still, in most cases the QFD can be traced to "clear-cut" QF activities, such as subsidized lending and bailout of commercial enterprises. In a few instances, the distinction between "normal" and QF activities may be subjective A useful criteria is to include all activities that may be undertaken directly by central government agencies. In this way, the cost of quasi-fiscal activities may be taken as a proxy for the level of government intermediation in the economy. It is also important to provide reference levels, above or below which a "normal" activity will become a quasi-fiscal activity. Normally, these will arise from targeted private sector or government lending operations from the Central Bank. A convenient benchmark is to use the cost of net lending as the sum that would have to be paid to a private commercial bank to undertake the lending itself[1].

Government accounts should then incorporate revenues and expenditures of all quasi-fiscal activities, leaving the accounts of public financial institutions covering only their "normal" activities. This should make more transparent the accountability of the government. Here, we follow Robinson and Stella [1988] by adjusting ex-post the fiscal deficit by the addition of a transfer from the government to the Central Bank--to cover the cost of QF activities--financed by credit from the Central Bank. As we shall see, this has the advantage of estimating explicitly the cost of QF activities in terms of "crowding-out" of the private sector.

To summarize, there is currently a lack of general agreement as to what is the best methodology to identify and compute the QFD, at least one that may be applied across countries and institutions. A

[1] So far, however, there is not a generally accepted objective method for estimating the subsidy value in official direct lending programs, mainly because the difficulty of precisely establishing the private rates that would have been paid by borrowers in private market without government intervention (see eg. Wattleworth [1988].)

single definition, no matter how comprehensive, will not capture the complex and country specific nature of the relationships between the central government and other public institutions that give rise to the QFD. Still, given the potential practical relevance of the QFD for the whole economy, it is necessary to develop a general framework within which one may examine its macroeconomic implications. In this section we provided general guidelines that will be useful when we try to estimate the QFD for Madagascar.

III. The Case of Madagascar

General Background

The recent economic history of Madagascar is, to a large extent, representative of a number of African countries. In the 1970s, Madagascar moved from a relatively open economy to a tightly regulated, command economy. The role of the public sector greatly increased, following the nationalization of foreign-owned assets and the introduction of pervasive economic controls. Import substitution and industrialization became central objectives, with agriculture relegated to a supporting role. In the late 1970s this strategy culminated in an ambitious public investment program composed of large, capital-intensive and economically non-viable projects. As a result, many new public enterprises generating negative value-added were created. To finance this strategy, the external debt burden increased significantly, constraining economic growth of the country to this day. This policy, together with declining terms of trade and stagnant revenues, led to a widening of external and internal disequilibria, high inflation, and a contraction in real GDP of 11 percent between 1980 and 1982.

In 1982-85, the Government carried out a generally successful stabilization program with IMF support. The program succeeded in halting the economic decline, and GDP grew by 1.4 percent on average between 1983 and 1987. On the external side, while exports declined in nominal dollar terms and interest payments soared, there was a major contraction in imports, which dropped by more than 40 percent in real terms during the first half of the 1980s. These developments, together with increasing external aid flows, helped improve significantly Madagascar's balance of payments. In parallel, the Government implemented a program of fiscal austerity. Fiscal deficit was reduced from its peak 14 percent of GDP in 1980 to 3.5 percent in 1985, through a drastic reduction of public expenditures. During the second part of the decade, the authorities consolidated this substantial fiscal adjustment effort and fiscal deficit was kept within a 3-4 percent range of GDP.

Economic recovery, however, was hampered by structural constraints. Among the most important were an overvalued currency, widespread quantitative import restrictions and price controls, a bloated and inefficient parastatal sector, a badly deteriorated and obsolete infrastructure, poor public services, and pervasive government interference in virtually all aspects of economic life.

To address these structural constraints, the Government launched a structural adjustment program in the second half of the 1980s. Most price controls were removed in 1985-89, and the public investment program was progressively rationalized. With regards to foreign exchange and trade liberalization, the Government devalued the Malagasy Franc (FMG) by a cumulative 53 percent in trade-weighted foreign currency terms in 1987, and in 1988 the FMG was further depreciated by a total 14 percent. As a result, by 1989 the real effective exchange rate had fallen to about 40 percent of its 1982 level. This major

Table 1
Madagascar: Selected Indicators
(Annual Percentage Change, 1986-1991)

	1986	1987	1988	1989	1990	1991
National Accounts						
GDP Market Prices	2.0	1.2	3.4	4.1	3.1	-6.9
GDP Deflator	14.2	23.0	21.2	12.0	11.5	14.1
Private Consumption	-2.6	-3.3	-1.8	1.2	4.1	-2.1
Government Consumption	-7.1	5.6	-9.9	8.1	-7.0	-6.7
Total Investment	7.8	16.6	33.9	4.8	28.0	-53.0
Exports of G&NFS	0.3	18.2	-0.6	24.0	11.1	-4.2
Imports of G&NFS	-6.0	-1.4	-10.3	6.2	26.3	-22.1
Foreign Sector						
Terms of Trade (deterioration -)	15.7	-22.1	-9.1	-12.0	-24.0	-5.8
Devaluation Effective Exchange Rate (FMG/US$)	10.9	34.3	23.5	-1.5	-13.5	10.0
Total Foreign Debt (% of GDP)	82.2	121.2	118.8	116.1	99.6	117.2
Debt Service Ratio1/	31.6	37.9	49.0	53.1	42.1	68.0
of which Government	28.0	27.4	29.6	16.1	17.7	18.1
Foreign Reserves (months of imports)	2.8	3.8	4.9	5.2	1.4	1.6

1/ After debt rescheduling and write-offs, as a proportion of exports of goods and services.

exchange rate adjustment enabled the Government to eliminate quantitative restrictions on imports in 1988, to launch a four-year program of tariff reform, and to introduce an automatic allocation system of foreign exchange for merchandise imports through an Open General Licensing system. In addition, export restrictions were substantially reduced, all state agricultural monopolies were eliminated (except for vanilla), and export taxes were abolished on all but the three traditional products (i.e., coffee, cloves, vanilla).

In the financial sector, where all banks were state-owned and were experiencing severe financial problems as well as weak and worsening portfolios, the Government also undertook a major reform. Specifically, by end-1989 the portfolios of the three state-owned banks had been cleaned-up of most of non-performing and of most doubtful assets. In 1980, a fully private new bank with majority foreign capital started operations and, in early 1991, one of the three state-owned bank was privatized, while a second obtained minority private participation, and two private foreign banks opened representations. In 1990, to encourage further competition in the financial sector, the Central Bank began replacing direct quantitative control mechanisms with a more flexible system based on the use of indirect market instruments.

Overall, despite slower than expected progress in "process-oriented" policy improvements (i.e., budgetary, civil service and public enterprise reforms), the cumulative implementation of sectoral and macroeconomic reforms implemented since 1985 was far reaching, and the difference between the policy

landscape in 1985 and that prevailing in 1991 was striking. Beginning in 1988, economic results were encouraging (see Table 1.) The country experienced positive per capita--albeit modest--GDP growth in three consecutive years (1988-90) for the first time in a generation, with tangible evidence of increased private investment, especially in labor-intensive, export-oriented ventures.

Financial Sustainability of the Economic Recovery

Notwithstanding the encouraging results of 1988-90, the supply response to the structural reform program implemented since 1985 has not reached its potential and may not be sustainable. In addition to major physical (infrastructure) bottlenecks, the inadequacy of the regulatory and legal framework to a well-functioning market economy, and declining terms of trade, the private sector-led economic recovery in Madagascar is severely constrained by lack of credit and the heavy debt burden of the country. The latter two constraints are two sides of the same coin and are both reflected in the country's precarious public finance.

Despite the above-mentioned success in reducing the central government's fiscal deficit, the latter is increasingly misleading to assess the public sector need of financial resources, and therefore, the financial resources available for the private sector. In parallel with the reduction of the central government deficit, the Central Bank (CB) has generated increasing "net other items" reflecting increasing losses in the 1980s. These losses can be principally traced as a result of the transfer to the CB of the responsibility for servicing the country's rescheduled external debt. Furthermore, these losses were not compensated by transfers nor interest payments from the government to the CB. The government has been using subsidized credit from the CB to finance its deficit. Until 1991, advances[2] from the CB to the treasury were virtually interest free (0.5 percent) until 1991. On the other hand, treasury's deposits at the CB were not remunerated. The evolution of the size of the net subsidy from the CB to the treasury was therefore determined by the evolution of CB net credit to government. As it is shown in Table 2, the implicit interest rates paid by the government on its net domestic debt are well below commercial interest rates, which have fluctuated between 15 and 25 percent per year.

The increase in the implicit interest rate paid by the government to the CB in 1989 and 1990 reflected simply the substantial reduction in the CB's net credit to government (from 17 percent of GDP in 1986 to 5 percent in 1990). In turn, this reduction reflected essentially (i) the low government payments of external debt maturities (see below) together with (ii) the accumulation of counterpart funds of external aid flows. Conversely, in 1991, net credit to government increased. The increase of the implicit interest rate paid by the government to the CB reflected the decision of the Government in mid-1991 to remunerate treasury deposits (to) and borrowing (from) the Central Bank at money market rate.

[2] Advances from the CB to the treasury are statutorily limited to a ceiling of 15 percent of ordinary budget revenues of the previous fiscal year and should be statutorily reimbursed within six months of the closing of fiscal year in which these advances are made. In practice however, these statutory provisions have been consistently violated. The actual ratio at the end of 1990, for example was about 290 percent of ordinary budget revenues of the previous year; even net of government deposits, the ratio of advances was 78 percent of the previous year's ordinary budgetary receipts.

Table 2
Average Interest Rates Paid on Domestic and Foreign Debt

	1986	1987	1988	1989	1990	1991
Implicit interest rate on net CB credit to government	2.0%	2.1%	2.6%	6.0%	7.0%	8.8%
Average Interest Rates on Foreign Debt						
Central Bank	6.8%	7.0%	7.1%	7.5%	6.3%	9.5%
Government	5.0%	5.5%	3.9%	2.3%	2.2%	2.6%

In the mid-1980s, the CB losses ballooned as a result of previous arrangements whereby the responsibility for servicing the rescheduled external debt was transferred to the CB. After seven Paris Clubs and four London Clubs, in 1991 CB debt outstanding represented 46 percent of total debt and 67 percent of the country's debt service. The interposition of the CB between domestic debtors, namely the government and public enterprises, and foreign creditors has resulted in three types of losses for the CB:

(i) As some initial debtors (public enterprises) defaulted, the CB is stuck with a portfolio of irrecoverable claims;

(ii) While the original debtors reimbursed the Central Bank in FMG according to the initial contract, CB was committed to service the debt on the basis of successive rescheduling agreements which, in lengthening maturities, were also increasing the total burden of the interests;

(iii) Subsequent exchange rate devaluations gave rise to valuation losses in the books of the CB. The CB statutes were amended at the time of the arrangements to state explicitly that the government would guarantee any resulting valuation losses. When external liabilities are amortized, CB realizes its accrued valuation losses. However, this guarantee has so far been ignored and the losses have accrued in a valuation account which the CB regards as a claim on government. As a consequence, the "revaluation account" records a mix of accrued and cash results from servicing of external debt (as well as a number of sundry operations and transactions).

As a result of this external debt arrangement, the government has significantly reduced its external debt service (and therefore its need of domestic financing) at the expense of the CB. By 1991, the long-term foreign liabilities of the CB (i.e., the country's rescheduled external debt) represented 180 % of its total assets (see Table 5). Clearly, the past and future losses generated by such an agreement should be viewed as part of the cost of a debt rescheduling and, therefore, should be part of a deficit measure, especially if the direct impact on the government's deficit was to reduce debt service payments. Furthermore, as shown in Table 2, while the government paid an average 2.9 percent interest in 1991 on its foreign debt, the CB paid 9.5 percent. This reflects the fact that after shifting the rescheduled part of the external debt to the CB, the government was left with essentially the more concessional (non-reschedulable) part of the debt.

Although the source of the CB losses have been identified, the full extent of the QFD cannot be readily assessed from the financial data available (i.e., the CB balance sheet and income statement). Since corrections for QF activities are done retroactively, we must take into account accumulated debt service payments from debt rescheduling agreements and subsidized credit dating back to 1986. Also, when computing the CB losses, it is important to clarify the accounting practice regarding the valuation account (see above).

IV. Analytical Framework

In order to examine the issues presented in this paper, we require the aid of schematic representations of the budget and balance sheet of the CB, and the government accounts. The need, however, of an economy-wide analytical framework is readily apparent. To a great extent, the QFD of the Central Bank reflects the level of "financial repression," and the distortions generated in the Malagasy economy due to heavy government intervention in the investment and saving process. The main sectors examined are then the central government, Private Sector, Central Bank, commercial banks, and the balance of payments.

The budget constraints for all sectors may be represented in a matrix format, commonly referred to as the flow-of-funds matrix (See eg. Holsen [1989].) Table 3 shows flow-of-funds matrices for Madagascar for the year 1991, both for the current and capital accounts. This table will be the basis of our discussion in the next pages. The overarching concept is that each sector in the framework must satisfy the following budget constraint:

Sources of Funds = Uses of Funds

Sources = Current Income + Accumulation of Liabilities

Uses = Current Expenditures + Accumulation of Assets

An important distinction is made between the current account and the capital account. The link between the current and capital account is each sector's saving. Generally, saving will be defined as the current account excess of sources over uses of funds above the line in each sector. In the case of the Central Bank and Private Banks, the current accounts would normally be identified with the profit-and-loss statements, and the capital accounts with the balance sheet. Current savings is then identified with the changes in net worth.

For each of the sectors, the row and column represents the expenditure and income breakdowns respectively. The balancing item for each sector's current account is saving, shown in the lower left-hand corner of the matrix. The equality of the capital account row and column says that the sum of their total uses of financing is equivalent to the total of their sources of financing, with the latter including own saving. To put it another way, the excess of investment over saving is equal to the net borrowing from domestic and external sources for each sector.

Table 3. Madagascar : 1991 Matrix of Sources and Uses of Funds (Billion FMG)

Current Account	Central Government		Private Sector		Central Bank		Commercial Banks		Balance of Payments		Production Account		Total
Central Government			TD NTR	64.5 56.5	Ecb	0.0			Tfg COG	0.0 38.2	TI -Sub	296.6 0.0	455.8
Private Sector	Tgp	64.9			OPCcb	16.1	OPCb iD*DD iT*TDp	0.0 0.0 0.0	Tfp WR PRfp	116.0 0.0 123.3	GDPfc	4561.6	4881.9
Central Bank	iC*CRcb	34.8	iL*LNcb	4.9			iL*LNb	0.0	iRESm	7.5			47.2
Commercial Banks	iC*CRb	8.9	iC*LNb	104.3									113.2
Balance of Payments	iF*Fg Tgf	55.7 0.0	iF*Fp PRpf Tpf	7.1 3.5 0.0	iF*Fcb	220.2					IMt -Xt	1169.3 849.2	606.6
C & S Account	Cg Sg	290.4 1.1	Cp Sp	4452.7 188.4	Scb	-189.1	Sb	113.2	Sf	321.6			5178.3
Total		455.8		4881.9		47.2		113.2		606.6		5178.3	

Capital Account	Central Government		Private Sector		Central Bank		Commercial Banks		Balance of Payments		Production Account		Total
Central Government			dBgp	9.3	dCRcb	-5.3	dCRb	-35.2	dFg KOG	190.7 52.5	Sg	1.1	213.1
Private Sector	KTgp	28.0			dLNcb	1.0	dLNb	100.2	dFp DFI OTHF	34.6 25.1 0.0	Sp	188.4	377.3
Central Bank	dDEPcb	-105.8	dCU	71.5			dRR	93.4	dFm	83.2	Scb	-189.1	-46.8
Commercial Banks	dDEPb	14.7	dDD dTD	106.5 31.0	dLNb	-43.3			dFb	-12.1	Sb	113.2	200.0
Balance of Payments					dRESm	0.8	dDEPf	41.6			Sf	321.6	364.0
C & S Account	Ig	276.2	Ip	159.0									435.2
Total		213.1		377.3		-46.8		200.0		364.0		435.2	

Table 4
Government Accounts
(as a Percentage of GDP)

	1986	1987	1988	1989	1990	1991
Total Revenue	12.7	15.4	13.8	15.4	16.2	10.5
Tax Revenue	11.8	14.1	12.5	10.2	10.3	7.4
Non-Tax Revenue	0.2	0.6	0.6	1.7	1.5	1.2
Foreign Grants	0.7	0.7	0.7	3.5	4.4	1.9
Total Expenditure	16.0	18.9	17.3	19.5	17.1	15.8
Consumption	7.7	7.5	6.8	6.9	6.2	6.0
Investment	5.4	7.0	6.9	9.7	7.9	5.7
Interest Payments	1.6	2.1	2.1	1.6	1.5	2.0
Domestic Debt	0.4	0.4	0.3	0.5	0.5	0.9
Foreign Debt	1.2	1.7	1.8	1.1	1.0	1.1
Other Expenditure	1.3	2.3	1.5	1.3	1.5	2.1
Government Deficit	-3.3	-3.5	-3.5	-4.1	-0.9	-5.3
Government Financing	3.3	3.5	3.5	4.1	0.9	5.3
Net External Borrowing	2.3	3.7	3.9	4.6	2.1	3.9
Drawings	4.6	6.6	7.2	6.6	4.1	6.0
Amortization	-2.3	-2.9	-3.2	-1.9	-1.9	-2.0
Net Domestic Credit	0.8	-0.4	-0.6	-0.7	-1.2	1.2
Non-Bank Financing	0.2	0.3	0.2	0.2	0.0	0.2

We will only describe in detail the budget constraints for the central government and the Central Bank. The algebraic representation of the budget constraints for all sectors is presented in the Appendix, together with a description of the variables used.

1. The Central Government

Under this heading, we will include only the fiscal authorities. Ideally, we would include the complete non-financial public sector. That is, all public sector except for the Central Bank and publicly-owned financial institutions. However, the lack of information in the case of Madagascar will not allow us to use this concept. The rest of the non-financial public sector will automatically be included in the private sector, which is calculated as the residual.

The current account of the central government can be described as follows:

$$DT + TI + NTR + E_{cb} + E \cdot COG^{*} - SUB = T_{gp} + i_C \cdot CR_{cb-1} + i_C \cdot CR_{b-1} + i^{*} \cdot E \cdot F^{*}_{g-1} + p_C \cdot C_g + S_g \quad (1)$$

Equation (1) defines the savings of the central government (S_g) as the sum of direct (DT) and indirect (TI) taxes, non-tax revenue (NTR), current official grants ($E \cdot COG^{*}$), minus subsidies (SUB), private transfers (T_{gp}), interest payments on Central Bank credit ($i_C \cdot CR_{cb-1}$), interest on commercial bank credit ($i_C \cdot CR_{b-1}$), interest payments on foreign debt ($E \cdot i^{*} \cdot F^{*}_{g-1}$), and government consumption ($p_C \cdot C_g$).

If the Central Bank reports profits, part of this may be transferred to the government as excess fiscal earnings. If on the other hand, the Central Bank incurs operating losses, the government may cover part of this through a transfer. Net Central Bank current transfers are represented by E_{cb} in Equation (1). In the case of Madagascar, there are no government transfers to cover Central Bank losses, hence E_{cb} is equal to zero.

The capital account of the central government is given by:

$$E \cdot KOG^{*} + \Delta CR_g + \Delta B_{gp} + E \cdot \Delta F^{*}_g + S_g = p_I \cdot I_g + KT_{gp} + \Delta DEP_g \quad (2)$$

Equation (2) simply states that public investment ($p_I \cdot I_g$), capital transfers to the Private Sector (KT_{gp}) and Central Bank deposits (ΔDEP_g), are financed through capital grants from abroad ($E \cdot KOG^{*}$), government savings (S_g) as well as non-bank financing (ΔB_{gp}), net credit from CB (ΔCR_{cb}), commercial banks (ΔCR_b), and net foreign (ΔF^{*}_g) borrowing.

In Table 3 we see that for 1991 the government collected 64.5 billion FMG in direct taxes, 296.6 billion of indirect taxes, and 56.5 billion in non-tax revenue. Additionally, it received 38.2 billion in foreign (current) grants. The government paid the CB 43.7 billion as interest to service its domestic debt. Government current savings amount to only 1.1 billion. In that period, total government borrowing requirements (net domestic and external borrowing), excluding capital grants, reached 265.3 billion FMG (including 105.8 billion FMG of government withdrawals from the Central Bank), or 5.3 % of GDP.

2. The Central Bank

The Central Bank budget holds for flows over any discrete period of time. For a Central Bank, no less than for any other economic unit, the difference between the flow of receipts and the flow of expenditures over some time period--that is, "saving", or the current "budget surplus", or the "change in net worth"--is necessarily equal to the sum of changes in assets less the sum of changes in liabilities.

In terms of the schematic budget statement and balance sheet:

Table 5
Central Bank Balance Sheet
(End-of-Period Billion FMG)

	1986	1987	1988	1989	1990	1991
Total Assets	819.6	1113.9	1352.9	1512.6	1372.5	1354.3
Foreign Assets	88.1	236.7	340.9	380.4	134.9	164.4
Government Credit	701.4	839.1	974.7	1093.8	1088.9	1083.6
Private Credit (Public Enterprises)	29.9	32.7	26.6	26.6	21.2	22.2
Credit to Banks	0.2	5.4	10.7	11.8	127.5	84.1
Total Liabilities	819.6	1113.9	1352.9	1512.6	1372.5	1354.3
Monetary Base	189.8	229.1	237.5	327.4	295.8	460.6
Government Deposits	307.3	438.3	599.2	784.1	796.4	690.6
ST Foreign Liabilities	103.3	111.2	79.0	151.5	156.6	239.7
o/w IMF	53.8	47.7	13.2	25.4	-1.1	3.0
Foreign Arrears	63.1	100.8	86.8	43.6	0.0	241.3
LT Foreign liab. (Debt Rescheduling)	762.1	1550.0	1920.1	2053.7	2060.6	2436.6
Net Other Liabilities	-606.6	-1315.5	-1569.7	-1847.7	-1936.9	-2714.5
o/w Valuation account	-405.6	-1058.7	-1286.3	-1413.1	-1489.6	-2087.2

Current Account

$$i_C \cdot CR_{cb-1} + i_L \cdot LN_{cb-1} + i_L \cdot LN_{b-1} + E \cdot i_R^* \cdot R_{m-1}^* = E_{CB} + E \cdot i^* \cdot F_{cb-1}^* + OPC_{cb} + S_{cb} \quad (3)$$

Capital Account

$$\Delta F_{cb} + \Delta CU_p + \Delta RR + \Delta DEP_g + \Delta V + S_{cb} = \Delta R + \Delta CR_{cb} + \Delta LN_{cb} + \Delta LN_b \quad (4)$$

Current revenues of the Central Bank include interest receipts on its net domestic credit to the government ($i_C \cdot CR_{cb-1}$), private and commercial banks credit ($i_L \cdot LN_{cb-1} + i_L \cdot LN_{b-1}$), and interest on foreign reserves ($E \cdot i^*_R \cdot R^*$, the asterisk denotes foreign currency). Its current revenues finance the Central Bank's operating cost (OPC_{CB}), interest payments on the Central Bank's foreign debt ($E \cdot i^* \cdot F^*_{cb}$), transfers to the government in the form of profits (E_{cb}), and savings, or net worth (S_{cb}). The operating costs (OPC_{cb}), also include net other assets (buildings, real state, etc.). Notice that the variations in Central Bank's net worth

are identical to the difference between the Central Bank's revenues and expenditures, but excluding capital gains or losses due to exchange rate devaluations.

In the capital account, the net worth, along with the net issue on foreign debt (ΔF_{cb}), the net increase in the monetary base (ΔCU_p + ΔRR currency in circulation and reserve requirements), capital gains/losses (ΔV, the so called valuation account), and the deposit balance of the government (ΔDEP_g), finance the acquisition of foreign reserves (ΔR), and domestic credit creation (ΔCR_s + ΔLN). The term ΔF_{cb}, net disbursements, include both short- and long-term net disbursements, as well as changes in arrears, which we consider as a financing item.

If we define the Central Bank deficit as the negative of the net worth, as defined here, then there is full consistency of treatment between the deficit of the Government and the Central Bank losses. In the case of the Government, the public sector deficit was intended to measure the financing needs rather than economic results. Consistency was achieved by adjusting the Central Bank's results for what is necessary to become a measure of financing needs. As in the case of the Government, amortization payments are included in net disbursements, and hence excluded from the deficit, even though they have to be financed.

The Valuation Account of the Central Bank

As in private-sector budget constraints, valuations effects (capital gains or losses) are assumed to be treated appropriately. That is, either excluded from both exchanges in assets and liabilities and the surplus of receipts minus outlays over the period, or systematically included in both. In standard balance sheet presentations, valuation accounts are included, as it is shown in Table 5. However, in the flow-of-funds presentation we have to limit ourselves to realized incomes and expenditures. The reason for this is the very nature of the flow-of-funds approach, which requires that somebody's income is somebody else's expenditure. For example, a devaluation of the exchange rate results in an increase in long-term foreign liabilities, denominated in local currency, but will not imply in an immediate disbursement from the CB until the debt is serviced. Thus, while capital gains or losses are part of true income, they will be reflected only as they are realized.

It is useful to obtain an independent estimate of the size of the valuation gains or losses. In principle, the valuation account of the central bank should capture only the accrued capital gains or losses arising from converting stocks of assets and liabilities denominated in a foreign currency to local currency. Valuation flows may be considered either an asset or a liability, the sign of which will depend on the value of net foreign assets. If the valuation account is considered a liability, and if net foreign assets of the central bank are positive, an exchange rate depreciation should generate an increase in the domestic currency value of net foreign assets, and a matching increase in the valuation account. Conversely, if the net foreign assets are negative, an exchange rate devaluation implies a decrease in the valuation account. Thus, a devaluation should not have an immediate impact on base money creation.

In the event of a devaluation, there are two effects that have to be taken into account when converting from foreign to local currency (we assume that all foreign assets and liabilities are denominated in the same currency, hence we ignore cross-currency effects.) First, is the **revaluation** effect, which occurs when stocks denominated in a foreign currency are converted to local currency. Clearly, a devaluation will increase the domestic value of the stock, even when its value in foreign currency remains the same. Second, is the **timing** effect which results from the fact that foreign currency denominated stock

are converted to local currency values using end-of-period exchange rates while the period average exchange rates are used to convert foreign currency flows to domestic equivalents.

In the case of the CB of Madagascar, as shown in Table 5, net foreign assets have been negative throughout, thus the valuation account--considered a liability--decreased substantially during the period. However, as we discussed in Section III, the valuation account mixes accrued with cash concepts, and includes "other items", not necessarily related with capital gains or losses. According to our estimates, only about 80 % of the valuation account reflects losses arising from exchange rate devaluations. As a result, part of the valuation account may be monetized.[3]

If E represents the average exchange rate, then we may express the capital account of the Central Bank, net of capital gains or losses as:

$$E \cdot \Delta F^{*}_{cb} + \Delta CU_{p} + \Delta RR + \Delta DEP_{g} + \Delta NW_{cb} = E \cdot \Delta R^{*} + \Delta CR_{cb} - \Delta LN_{cb} + \Delta LN_{b} \qquad (5)$$

This expression will then replace the budget constraint represented by Eq. (4) above. Notice that we have replaced ΔF_{CB}, net disbursements in local currency, by $E \cdot \Delta F^{*}_{CB}$ (the asterisk denotes foreign denominated currency), and ΔR, change in reserves in local currency, by $E \cdot \Delta R^{*}$. Also, we have excluded the valuation flows from the budget constraint of the Central Bank. We now discuss how the actual figures were computed for the CB of Madagascar for the year 1991.

On the current revenue side, the CB received 34.8 billion FMG from the government as interest payments. This figure is not directly available, but was computed assuming that the government paid the same interest on its bank and non-bank debt, and that there is not a spread between government credit and government deposit interest rates. The sum of government interest payments of 34.8 billion to the CB, and 8.9 billion to commercial banks, matches the 43.7 billion reported by the central government as interest payments on domestic debt.

As can be seen in Table 4, interest payments on government's domestic debt have been traditionally quite low, and have increased only in later years (see Section III above). The figure for interest on foreign reserves, 7.5 billion, was taken directly from the balance of payments. From Table 3, we see that interest on foreign debt reached 220.2 billion FMG in 1991. This figure was taken from foreign debt service payment information compiled independently by the CB. The figure of 7.1 billion, which we report as operating cost, represents items like wages, real state and net other assets. This figure was obtained residually, so that the difference between current revenues and expenditures match the historically given operating loss of 189.1 billion FMG for 1991 (3.9 % of GDP).

As we can see in the capital account matrix in Table 3, to finance net worth loss and withdrawal from government deposits, the monetary base was increased by 164.9 billion FMG, or 3.4 percent of GDP. Net foreign disbursements amounted to 74.2 billion. Amortization of foreign debt in 1991 reached 109.4

[3] Of course, exchange rate losses may also be eventually monetized through net repayments of foreign liabilities, and through larger interest payments on the stock of (negative) net foreign assets.

million SDR, or about 275 billion FMG. Most of the foreign financing, however, is in the form of arrears. In 1991, foreign arrears of the Central Bank increased by 241.3 billion FMG.

What we have done so far is just the manipulation of current and capital accounting identities. However, they provide useful insights regarding the sources of monetary expansion in any given country. Equation (5) states that the base money ($\Delta CU_p + \Delta RR$) expands not only when net foreign assets or domestic credits are expanded, but also when the Central Bank runs an excess of interest payments plus operating costs over interest revenues, what we have defined as the changes in the net worth (ΔS_{cb}). The latter, usually disregarded in monetary policy analysis, is at the core of the monetary disequilibrium caused by the quasi-fiscal deficit.

V. Estimating the QFD for Madagascar

In Section II we discussed some of the activities that may account for the losses of the Central Bank. In general, the losses originate when the Central Bank takes on other functions besides its normal role, such as subsidized lending to priority sectors, rescue of troubled financial institutions, or granting foreign exchange guarantees. In the case of Madagascar, we have traced CB losses mainly to "quasi-fiscal" activities arising from debt rescheduling agreements. As we discussed in Section III, the CB adopted responsibility for servicing the country's rescheduled external debt, which is in effect a form of exchange rate guarantee.

In addition, the government obtained subsidized lending from the CB, in principle contributing to increase CB losses. Strictly speaking, this is not a quasi-fiscal deficit since this is usually the way in which the CB transfers seigniorage and inflationary tax revenue to the government. Nevertheless, if the CB is incurring losses, any interest payment from the government may be used to reduce them. On the other hand, if the CB bank is making a profit, all interest payments are normally transferred back to the government in the form of fiscal surplus (E_{CB} if we use our notation.) In any event, it is important to increase transparency by allowing the government to service its CB debt at market rates, and having seigniorage or other revenues transferred to the government explicitly.

Unlike most other central bank activities, guarantees have no immediate effect on either the profit-and-loss account or the balance sheet. Nevertheless, and Madagascar is a clear example, they may eventually result in large losses. As we have discussed, an exchange rate depreciation generates an increase or decrease in the valuation account, with no immediate effect on base money creation. However, when a guaranteed debt service payment is made, the value of its foreign assets falls by an amount equal to the foreign currency payment multiplied by the new exchange rate. As in the case of Madagascar, if this amount is greater than the money base used by the government or the private sector to purchase foreign exchange from the CB, then the result is a reduction of the net worth (increase of the deficit) of the Central Bank.

As we discussed in Section II, the government accounts should reflect the expenditures of the activities described above. We will accomplish this in two steps. First, we will adjust government foreign and domestic debt service flows. Obviously, this will also affect CB accounts. Second, we will "finance" the resulting increase in government debt service with credit from the CB. The direct effect of this will be an increase in the PSBR (Public Sector Borrowing Requirements), financed from CB credit. Table 6 shows the results of these operations for 1991, using the flow-of-funds format. Table 7 shows the government deficit "corrected" by introducing the QFD for the period 1986 to 1991.

Table 6. Corrected 1991 Matrix of Sources and Uses of Funds (Billion FMG)

Current Account	Central Government		Private Sector		Central Bank		Commercial Banks		Balance of Payments		Production Account		Total
Central Government			TD NTR	64.5 56.5	Ecb	80.5			Tfg COG	0.0 38.2	TI −Sub	296.6 0.0	536.3
Private Sector	Tgp	64.9			OPCcb	16.1	OPCb iD*DD iT*TDp	0.0 0.0 0.0	Tfp WR PRfp	116.0 0.0 123.3	GDPfc	4561.6	4881.9
Central Bank	iC*CRcb	98.7	iL*LNcb	4.9			iL*LNb	0.0	iRESm	7.5			111.1
Commercial Banks	iC*CRb	3.9	iC*LNb	104.3									113.2
Balance of Payments	iF*Fg Tgf	261.4 0.0	iF*Fp PRpf Tpf	7.1 3.5 0.0	iF*Fcb	14.5					IMt −Xt	1169.3 849.2	606.6
C & S Account	Cg Sg	290.4 −188.0	Cp Sp	4452.7 188.4	Scb	0.0	Sb	113.2	Sf	321.6			5178.3
Total		536.3		4881.9		111.1		113.2		606.6		5178.3	

Capital Account	Central Government		Private Sector		Central Bank		Commercial Banks		Balance of Payments		Production Account		Total
Central Government			dBgp	9.3	dCRcb	395.7	dCRb	−35.2	dFg KOG	−21.2 52.5	Sg	−188.0	213.1
Private Sector	KTgp	28.0			dLNcb	1.0	dLNb	100.2	dFp DFf OTHF	34.6 25.1 0.0	Sp	188.4	377.3
Central Bank	dDEPcb	−105.8	dCU	71.5			dRR	93.4	dFm	295.1	Scb	0.0	354.2
Commercial Banks	dDEPb	14.7	dDD dTD	106.5 31.0	dLNb	−43.3			dFb	−22.1	Sb	113.2	200.0
Balance of Payments					dRESm	0.8	dDEPf	41.6			Sf	321.6	364.0
C & S Account	Ig	276.2	Ip	159.0									435.2
Total		213.1		377.3		354.2		200.0		364.0		435.2	

Table 7
Government Accounts Corrected for QFD
(as a Percentage of GDP)

	1986	1987	1988	1989	1990	1991
Total Revenue	12.7	15.4	13.8	15.4	16.2	10.5
Total Expenditure	19.0	23.1	21.6	24.9	21.1	21.4
Consumption	7.7	7.5	6.8	6.9	6.2	6.0
Investment	5.4	7.0	6.9	9.7	7.9	5.7
Interest Payments	4.6	6.3	6.4	7.0	5.6	7.6
Domestic Debt	2.0	1.9	1.8	1.8	1.8	2.2
Foreign Debt	2.6	4.4	4.6	5.2	3.8	5.4
Other Expenditure	1.3	2.3	1.5	1.3	1.5	2.1
Government Deficit	-6.3	-7.7	-7.8	-9.5	-5.0	-10.9
Uncorrected Deficit	-3.3	-3.5	-3.5	-4.1	-0.9	-5.3
Quasi-Fiscal Deficit	-3.0	-4.2	-4.3	-5.4	-4.1	-5.6
CB Profit Earnings	0.6	0.0	1.4	1.3	0.7	1.6
Government Financing	5.7	7.7	6.4	8.2	4.3	9.3
Net External Borrowing	1.8	2.8	2.7	3.2	1.1	-0.4
Drawings	4.6	6.6	7.2	6.6	4.1	6.0
Amortization	-2.8	-3.8	-4.5	-3.3	-3.0	-6.4
Net Domestic Credit	3.7	4.6	3.5	4.8	3.2	9.5
Non-Bank Financing	0.2	0.3	0.2	0.2	0.0	0.2

For practical reasons, we will assume that the central government will cover all debt service obligations arising from debt rescheduling operations. As it is reported by the CB, total debt service is basically composed by debt rescheduling repayments and the rest, which includes IMF net purchases. Since there is information available for debt rescheduling repayments, the separation was straightforward. For example, in 1991 the CB allocated about 93% of its total interest payments, and 77% of principal repayments to service debt rescheduling obligations. Thus, without debt rescheduling repayments, the CB would have paid only 14.5 billion FMG in interest, and 65.8 billion FMG in principal in 1991.

Interest payments on CB debt, were increased to 98.7 billion FMG in the government accounts. This reflects payments based on 12 % interest, which reflects commercial rates on old and "new" CB credit. Since we have made the corrections starting from 1986, by 1991 the government would had accumulated 1,259.9 billion FMG in net credit from the CB. After these ex-post corrections, in 1991 the CB pays only 14.5 billion in interest payments on its foreign debt, and net government borrowing form the CB increases from a "formal" level of -5.3 billion FMG (i.e., net repayment to the financial system)

to a "reconstructed" level of 395.7 billion FMG. The CB would then be making a profit of 80.5 billion in 1991. We assume, however, that it is fully transferred back to the government as excess fiscal earnings.

As we can see in Table 7, the government deficit is basically doubled in the period 1986-1991 if we add the QFD. This does not change the overall macroeconomic picture, it simply increases the transparency of the public finance accounts, thereby clarifying the sources and uses of resources in the economy. However, by improving the assessment of the public sector deficit, this exercise has far reaching policy consequences for the country's economic policy. In the particular case of Madagascar, the assessment of quasi fiscal deficit reveals that the modest "formal" fiscal deficit was grossly misleading. It could not be reconciled with continuing inflationary pressures and tight credit policy vis-a-vis the private sector. It now squarely raises the question of the sustainability of the public sector deficit and therefore the consistency between the government's development strategy and its macroeconomic policy.

The "reconstructed" fiscal deficit is not sustainable in the long run and contradicts the country's development strategy. In a nutshell, the high public sector deficit either crowds out the private sector credit or will translate into inflation. Both will defeat the development strategy that is based on the development of the private sector and exports. In consequence, the country must intensify its fiscal effort. This calls for reducing the fiscal deficit. However, as we have seen in Section III, after the real fiscal effort on the expenditure side that took place during the early 1980s, and the high needs of public expenditures in the area of infrastructure and social services, the room of manoeuvre as well as the desirability of further cuts in aggregate expenditure is extremely limited. Instead of further overall expenditure cuts, an energetic pursuit of the on-going public expenditure restructuring, and increased efficiency of public management should be pursued.

The fiscal effort is therefore to be borne primarily on the revenue side. Additional tax revenues could amount to several points of GDP if tax evasion was lower. In turn, this calls for decreasing the tax rates, eliminating exemptions and improving the tax yield by strengthening the tax administration. Also on the revenue side, one of the reportedly major source of revenue shortfall is that public enterprises do not pay their debt to the government. It is urgent to aggressively pursue the privatization/liquidation of public enterprises to stop the drain on public resources and, in a limited number of cases, to bring additional revenues to the budget.

In parallel with a stronger fiscal effort, the debt service burden should be alleviated through more favorable rescheduling terms. Most of the QFD comes from exchange rate losses. Although a tightened fiscal management could reduce the fiscal deficit, an overly tight macroeconomic policy to enable the country to service its debt may be self-defeating. This poses the familiar problem of the sustainability of the country's debt service and its consistency with the country's development strategy. In a context of sharp declining terms of trade due to the prolonged decline in the prices of its major exports, the service of the external debt is unsustainable without additional inflows of balance of payment support or more favorable terms of rescheduling.

Due to its rapidly declining traditional exports, Madagascar is caught into a vicious cycle that will be difficult to break. On the one hand, to be able to service its debt, Madagascar urgently needs more export revenues through the development of new products, which imply maintaining a competitive exchange rate and more investment in key sectors. In turn the latter implies a more favorable environment for the development of the private sector, including credit availability. On the other hand, the debt service burden increases the public sector's needs of resources, which crowds out the private sector and increases the government's reluctance to devalue.

VI. Conclusions

The stance adopted throughout this paper has been decisively operationally-oriented. It provides a straightforward methodology to better assess the importance of public sector activities not directly captured in conventional deficit measures. Our approach implies the identification of quasi-fiscal, as opposed to "normal" operations, of public financial institutions. Although clear-cut distinctions may be difficult, it is nonetheless important to identify activities that may be directly undertaken by the central government, and that are in principle behind the losses of financial intermediaries. Often, the quasi-fiscal losses can be traced, as in the case of Madagascar, to exchange rate guarantees and subsidized credit. Hence, the most important telltale signs of a potentially large QFD are decreasing government debt service payments vis-a-vis the rest of the economy, and subsidized Central Bank credit either to the government or to the private sector.

For a government, showing a strong "formal" fiscal adjustment has the advantage, in the short-run, of strengthening the confidence of both the international donors and the local private sector in the capacity of the government to control the public deficit. In the longer run, however, governments run the risk of getting addicted to this sort of fiscal drug and to "forget" the very existence of the quasi-fiscal expenditures that are left to the Central Bank to deal with.

Estimation of the quasi-fiscal deficit is crucial to improve the country's economic analysis and projections. The quantification of quasi-fiscal deficits solves the apparent paradox between a small "formal" deficit and crowding out of the private sector and/or inflationary pressures. As illustrated by the example of Madagascar, accounting for these quasi-fiscal operations significantly changes the picture of fiscal performance and monetary stability and raises a number of key issues with regard to the sustainability of the economic recovery. From a fiscal standpoint, by obscuring the full magnitude of public sector financing needs, the importance of these activities cannot be properly weighted against that of other activities competing for limited resources. From a monetary stand point, quasi-fiscal deficits may seriously interfere with monetary policy. The Central Bank, in its reserve money management has to compensate for the autonomous increase of reserve money due to losses resulting from quasi-fiscal operations or accept the inflationary consequences.

The cost spent in computing the QFD may be more than rewarded in terms of the policy implications. We have seen that in the case of Madagascar, the difference between the "reconstructed" fiscal deficit is inconsistent with the government development strategy. In policy terms, a reform of the tax system with a view to increase tax collection is warranted, the ongoing public enterprise reform ought to be accelerated and the restructuring of expenditure should be pursued energetically. Also, by placing the external debt service constraint into a fiscal perspective, it clearly shows, in fiscal terms, that the debt service burden is too high to be reconciled with a sustainable positive per capita growth, especially in a context of falling terms of trade.

On the institutional front, the policy implication is to strengthen the financial independence of the Central Bank. In many countries such as Madagascar, this is ensured *de jure* by the articles of incorporation of the Central Bank, but disregarded in practice. Enforcement of this practice should rank high in the list of measures included in the adjustment programs supported by the IMF and the World Bank.

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Annex: Budget Constraints

I. Public Sector

Current Account

$$DT + TI + NTR + E_{cb} + E \cdot COG^* - SUB = T_{gp} + i_C \cdot CR_{cb-1} + i_C \cdot CR_{b-1} + i^* \cdot E \cdot F^*_{g-1} + p_C \cdot C_g + S_g \quad (6)$$

Capital Account

$$E \cdot KOG^* + \Delta CR_g + \Delta B_{gp} + E \cdot \Delta F^*_g + S_g = p_I \cdot I_g + KT_{gp} + \Delta DEP_g \quad (7)$$

II. Private Sector (Including Public Ent.)

Current Account

$$Y_{fc} + T_{gp} + E \cdot (T^*_{fp} + PR^*_{fp} + WR^*) + i_B \cdot B_{g-1} + P\&L_m + i_D \cdot DD_{p-1} + i_T \cdot TD_{p-1} = DT + NTR + i_L \cdot LN_{p-1} + i_C \cdot CR_{p-1} + E \cdot (i^* \cdot F^*_{p-1} + PR^*_{hf} + T^*_{hf}) + p_C \cdot C_p + S_p \quad (8)$$

Capital Account

$$E \cdot \Delta F^*_p + E \cdot \Delta DFT^* + \Delta LN_p + \Delta CR_p + KT_{gp} + S_p = p_I \cdot I_p + \Delta B_g + \Delta CU_p + \Delta DD_p + \Delta TD_p \quad (9)$$

III. Central Bank

Current Account

$$i_C \cdot CR_{cb-1} + i_L \cdot LN_{cb-1} + i_L \cdot LN_{b-1} + E \cdot i^*_R \cdot R^*_{m-1} = E_{CB} + E \cdot i^* \cdot F^*_{cb-1} + OPC_{cb} + S_{cb} \quad (10)$$

Capital Account

$$E \cdot \Delta F^*_{cb} + \Delta CU_p + \Delta RR + \Delta DEP_g + S_{cb} = E \cdot \Delta R^* + \Delta CR_{cb} + \Delta LN_{cb} + \Delta LN_b \quad (11)$$

IV. Commercial Banks

Current Account

$$i_C \cdot CR_{b-1} + i_C \cdot CR_{p-1} = i_L LN_{b-1} + i_D \cdot DD_{p-1} + i_T \cdot TD_{p-1} + OPC_b + S_b \tag{12}$$

Capital Account

$$\begin{aligned} &\Delta CR_b + \Delta CR_p + \Delta RR + \Delta DEP_f \\ &\quad = \Delta DEP_b + \Delta LN_b + \Delta DD_p + \Delta TD_p + \Delta F_b + S_b \end{aligned} \tag{13}$$

IV. Foreign Sector

Current Account

$$\begin{aligned} &p_{IM} \cdot IM - p_X \cdot X + E \cdot (i^* \cdot F^*_{t-1} + PR^*_{tf} + T^*_{tf} + T^*_{ftf}) \\ &\quad = E \cdot (i^*_R \cdot R^*_{m-1} + PR^*_{ftp} + T^*_{fp} + T^*_{fg} + WR^* + COG^*) + S_f \end{aligned} \tag{14}$$

Capital Account

$$E \cdot \Delta R^*_m + S_f = E \cdot KOG^* + E \cdot \Delta DFI^* + E \cdot \Delta F^*_t \tag{15}$$

Variable Definitions:

Variables with an asterisk are defined in US$. All the variables are expressed in local currency at current prices except otherwise specified. Variables with bars are, in general, exogenous. The subscripts g,p,f, and m refer to the government, private, foreign, and monetary sectors respectively, and the order specifies the flow of funds (eg. pf is private to foreign). The time subscripts are denoted as t-1 or -1.

B_g	Bonds
C	Consumption (constant prices)
COG^*	Current Official Grants
CR	Credit from the monetary sector
CU_p	Currency in circulation
DEP_g	Government Deposits
DD_p	Demand deposits
DFI^*	Direct foreign investment
DT	Direct taxes
E	Average exchange rate
E_e	End-of-period exchange rate
F^*	Foreign credit
I	Investment (constant prices)
i^*	Nominal foreign interest rate on foreign credit
i_R^*	Nominal foreign interest rate on reserves
i_C	Nominal interest rate on monetary sector credit
i_D	Nominal interest rate on demand deposits
i_T	Nominal interest rate on time deposits
IM	Imports (constant prices)
KOG^*	Capital official grants
KT	Capital transfers
LN	Credit From Central Bank
M	Money
NTR	Non-tax revenue

p	Average GDP Deflator
p_{CI}	Consumption-Investment Deflator
p_e	End-of-period GDP Deflator
p_{IMX}	Import (export) price index
$P\&L_{..}$	Distributed profits of monetary sector
PR^*	Profit remittances to-from abroad
R^*	Foreign reserves
RR	Reserve requirements
S	Savings
SUB	Subsidies
T	Current transfers
TD_p	Time deposits
TI	Indirect taxes
WR^*	Workers' remittances from abroad
X	Exports
Y	GDP at market prices
Y^*	Income main trading partners
Y_{fc}	GDP at factor cost

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